

recognize. Von Graefe's, Moebius', Stellwag's and Dalrymple's signs may be elicited but are not constant. The most important is the exophthalmus, and various ideas are advanced as to its causation. Some of them are: that it is due to a weakness of the eye muscles; that a venous enlargement pushes the eyeball forward; that in marked cases there is an increase of retrobulbar fat, but none of these has been accepted above the others.

Loss of weight is in some instances present in the early course of the disease, and if taken with the symptom of tachycardia was usually considered to be more significant of tuberculosis. However, we are now more familiar with the varied types of excessive thyroid secretion and by careful observation soon place these cases in their proper class. This profound loss of weight is due to the loss of fat and albumen from the ever-present metabolic increase, as demonstrated by Magnes Levy⁷ (by instituting exact determinations of the respiratory gas changes). At the same time the gastro-intestinal digestion is undisturbed unless there are attacks of serous diarrhoea. Not infrequently there is an increase of appetite, also increased flow of saliva, and in early cases the bowels may move more than once daily.

Farrant⁹ has shown that thyroids obtained post-mortem from cases of acute and chronic intestinal obstruction have revealed no signs of hyperplasia, and concludes that there is no evidence to show that products of intestinal putrefaction have any action on the thyroid.

There still remains for our consideration an enormous group of symptoms directly or indirectly referable to hyperthyroidism, but lack of time prevents more than a casual mention of them. Muscular weakness is one of the early symptoms; then there are the skin changes, i. e., pigmentation, decrease in galvanic resistance (Vigouroux and Charcot) and sensations of heat; leukoplakia, alopecia, amenorrhœa, dysmenorrhœa, polyuria, albumenuria, alimentary glycosuria, emaciation and cachexia, while occurring in cases of moderate severity and advanced cases they are not characteristic symptoms.

In conclusion it must be evident from the foregoing limited discussion that the usual so-called cardinal symptoms of hyperthyroidism, i. e., tachycardia, exophthalmus and goitre, are not constantly present. Any two of them may be absent, and it is only by constantly bearing in mind the frequency of the early and often insidious onset of the condition at puberty, and by careful observation of the sometimes transitory character of the leading symptoms that we will increase our diagnostic acumen.

Bibliography.

1. Dr. C. C. Tatum: Canadian Medical Association Journal. Feb., 1914. Symptoms and Treatment of Hyperthyroidism.
2. Frazier, M. D.: Goitre and Hyperthyroidism. Annals of Surgery. 1914.
3. L. F. Barker: Johns Hopkins Hospital Bulletin. February, 1911.
4. W. H. Lohman: St. Mary's Hospital Clinic, 1913.
5. Wm. H. Good: Archives of Diagnosis. Jan., 1914.
6. Sahli's Diagnostic Methods.
7. Pfaundler & Schlossman: Diseases of Children.
8. Thomas Jameson: Indications for Surgical Treatment of Hyperthyroidism. N. Y. Medical Journal.
9. Rupert Farrant, F. R. C. S.: British Medical Journal, July, 1914. Endemic and Exophthalmic goitre.

TREATMENT OF SYPHILIS.

By GRANVILLE MAC GOWAN, M. D., Los Angeles.

(Concluded from Page 75, March Journal.)

Mark: "At present, I am using for the treatment of syphilis, salvarsan intramuscularly in the lumbar region as an initial treatment. This salvarsan is prepared in the following manner: The salvarsan is poured into a small salt mouth bottle containing glass beads. Just sufficient warm sterile water, distilled, is poured into the bottle to dissolve the salvarsan. To this is added two or three drops of a 1% alcoholic solution of phenolphthalein as an indicator. Following this a freshly prepared sterile 4% solution of sodium hydrate is added, drop by drop, and the contents shaken until the preparation is a faint salmon pink. It will be found that this will make in amount about eight to ten c.c. This is injected in the lumbar region, in the muscles on each side in divided doses. This whole procedure is preceded by the injection, one-half hour previously, of one-fourth grain morphin and 1/150 of atropin. It is practically painless. This is usually done in the hospital, the patient leaving the following morning and returning to work. In about one week, we begin intramuscular injections of mercury salicylate, or inunctions of mercury. Inunctions are given daily for six days, followed by a Turkish bath on the seventh day without inunction. Intramuscular injections of salicylate are given where they do not cause too much pain and are not objected to by the patient. In six months to one year later we give other salvarsan mercurial courses with tonics. They are continued for about two and one-half years, at the end of which time a rest is taken for six months and a Wassermann is taken; if negative, six months more are allowed to elapse, then a second Wassermann is taken. If still negative, the patient is requested to take twice a year about six weeks of mixed treatment, purely as a precautionary measure."

Chassignac: "You know it should not be the disease, or the cause of the disease you treat, but the patient; hence there can never be a routine. The new drugs I consider not tried long enough to know of the permanence of their effect. Salvarsan I use to control the symptoms, but prefer to use the old and new forms in the treatment, in combination, so as to give the benefit of all we know to the patient. The mercury, I prefer to administer in the form of soluble salts by the needle, or by inunctions. The salvarsan, I prefer to give by intramuscular injections. Until we have accumulated sufficient proof that the salvarsan can do what mercury can do and in a shorter time, I intend to continue advocating the three years' treatment. I am guided by the Wassermann, but do not consider it infallible in its indications, nor

that it replaces clinical observations or judgment based on experience."

Gradwohl: "I believe in the combined salvarsan and mercury treatment. I give at least six doses of 0.4 grammes at intervals of ten days, followed by six intramuscular injections of salicylate at weekly intervals. That brings us up to the 110th day of the treatment, then a Wassermann is made. If negative, I give iron tonics for two weeks and then repeat the course, substituting twenty-four rubs for the injection of salicylate, of course avoiding salivation, which brings us to the 200th day of the treatment, when another Wassermann is made. If negative, another course of tonics for thirty days, and then a Wassermann. This is followed with twenty-four more rubs in a series of six, and tonics for twenty days. If the Wassermann continues negative four salvarsan injections at intervals of three weeks, then a rest for thirty days. This is the 476th day; then a series of inunctions, twenty-four in all, in groups of six. This treatment is pursued for three or four years with salicylate injections and inunctions of mercury and Wassermann reactions at periodic intervals. After three years, with a succession of repeated negative Wassermans, and with spinal fluid test negative, after provocative Wassermann, I place the patient under observation for two years with treatment four months in the year."

O'Crowley: "In primary syphilis, as soon as the diagnosis is clinched, either by the microscope, or by a Wassermann, I give a full dose of neosalvarsan intravenously weekly, for four to six weeks and follow that weekly for a year with intramuscular injections of salicylate of mercury, the dose being graduated according to the susceptibility of the patient to mercurials, and according to his resistance. The injections are sometimes continued for eighteen months. After an interval of six weeks, following the last injection, a Wassermann is made, and if negative, another is taken every three months for one or two years. If they are all negative, an examination of the spinal fluid is made, if the patient will consent, and if this is negative I consider him cured. If, however, the Wassermann should show two plus or over, I advise four intravenous injections of neosalvarsan weekly, followed by intramuscular injections of mercury weekly for several months, then a rest for six weeks before a Wassermann, which should be negative. If my patient has never had generalized symptoms, I do not think it is necessary to use the iodides. With this method, I get good and bad results, and feel that the time has come to standardize the treatment of syphilis, for I do not feel justified in speaking too enthusiastically of my present ideas and system."

Lyon: "I believe salvarsan is a specific poison to the spirochete, the efficiency of which is in direct ratio to the age of the infection, but I have never employed it as the only remedy in the treatment of syphilis. I believe it is impossible to cure syphilis with this drug, unless the diagnosis be made before the lymphatics become involved. As soon as the diagnosis is made the patient is treated by combined mercury and salvarsan, receiving three

or four injections of .4 salvarsan weekly, and following this course, ten or twelve injections of grey oil or salicylate, then a rest for a month during which time tonics are given. Then the treatment is repeated and the patient allowed two months' rest, during which tonics are given again. At the beginning of the second year, twelve injections of mercury without the salvarsan are given before a rest for three months with tonics and iodides, followed by another course of mercury injections, with a six months' rest and then a repetition of the injections. The results of this treatment in my hands have been altogether favorable. Syphilitic patients must continue, as in the past, to remain under observation for years. The Wassermann reactions during the treatment are variable and often contradictory to the symptoms. In so-called tertiary cases, I have often seen active lesions with a negative Wassermann found positive, a few months later without any treatment. The Wassermann is absolutely no criterion as to the extent of the cure of a still active disease."

Charlton (of Indianapolis): "In acute cases, one full dose of salvarsan intravenously and then twelve to fifteen intramuscular injections of calomel or grey oil at weekly intervals, followed by another full dose of salvarsan. This standard is purely arbitrary, arrived at by observation. Since using it, I have not had a single recurrence, either clinically or by the Wassermann. Where the syphilis has become generalized this is not sufficient in quite a percentage of the cases. Cases of tabes, paresis and old profound visceral syphilis I would not include as suitable for the above routine. But, I believe that the above short course will absolutely and permanently cure the majority of early cases."

McDonagh: "Every one has agreed that if syphilis is to be cured, diagnosis of the initial lesion at the earliest possible moment is essential. I feel very strongly that the best diagnosis is a clinical and not a Wassermann one. Excision of the primary sore to be practiced when possible. If this cannot be done, it should be cauterized. Following this, at intervals of four days, I give seven injections of neosalvarsan, commencing with .04 and ending with .75. A week after the seventh injection, an intramuscular injection of grey oil followed by seven others. This is to be followed by eight intramuscular injections of grey oil, at intervals of a week, then iodides for three weeks, followed by a rest of five weeks, and then a repetition of the course. Mercury and the iodides and the rest twice repeated. If the disease has become generalized, if possible an examination of the cerebro-spinal fluid. If the fluid is normal, seven injections of neosalvarsan at intervals of from four to seven days. If the fluid is pathological, nine to eleven injections, and if still positive after this, as many intradural injections of salvarsanized serum as is necessary to render the fluid normal, then six courses of the mercury and iodide treatment spread out over two years. The injections of neosalvarsan commence with 0.45 and end with 0.90. Latent stage—when I placed reliance upon the Wassermann reaction, treating those who gave

a positive reaction, and leaving those who gave a negative reaction, the course was not clear; but now, I no longer attach the importance to this reaction which I once did, and I have to alter my routine. I now examine the cerebro-spinal fluid and if this is normal, however positive the blood may be, I do not advise any treatment. If the cerebro-spinal fluid is positive, whether the blood is positive or negative, I give as many injections of salvarsanized serum as is necessary to render the fluid normal again, and supplement by one or two years' treatment of mercury."

It has always seemed to me, from the beginning of my knowledge of syphilis, that its progress could be stayed if vigorous treatment could be commenced before the advent of generalized symptoms. I got this opinion from Auspitz, a brilliant clinician, who, derided by his fellows at the Vienna Clinic, went on excising chancres coming to observation early, and pushing mercury afterwards without waiting for secondary symptoms, because he knew he had by these means, in a few instances, prevented the fastening of this plague for life upon the victim. For more than twenty years I stood almost alone among the teachers of America in advocating the effort to eradicate syphilis, before the advent of general symptoms. To-day, many are with me. The discovery of the fact that the spirochete pallida and its spores are the cause, that they can be detected in the initial sore soon after its advent, and that intravenous injections of salvarsan or neosalvarsan, given early and often, will destroy them in situ and cure the disease, is the cause of the change. Now everybody believes that the patient should be cleared up, before he can infect others.

The time to realize the dream of a positive cure of syphilis is to accomplish it before the disease has become generalized. The average initial lesion is so well marked that a trained clinician cannot go astray in the diagnosis. The spirochete can be found in the vast majority of cases just before, or at the commencement of the induration of the neighboring lymphatic glands. Given a sore that answers the description of a Hunterian chancre, anywhere upon the body surface, with or without the ability to find the spirochete therein, it should be destroyed by excision with the electric cautery, and if no time should be lost in the administration of five to seven injections of salvarsan, or neosalvarsan, in increasing doses, at intervals of four days to a week, a permanent and positive cure will be effected. Enough should be given to overwhelm the parasite but not destroy the patient. There are but two definite contraindications for this treatment. One is renal insufficiency, and the other is acute infections of the respiratory tract. One must not wait for generalization, which certainly is accomplished very frequently while the Wassermann is still negative. After generalization has taken place, when mucous patches are present in the mouth, and the various erythematous, papular, squamous or papulo-pustular lesions have occurred upon the skin, then to me the best method, holding forth the greatest hope of permanent success, lies in the combined treatment of mercury

and the arsenical preparations, of which salvarsan is the type. To be effective, however, the arsenical preparations must be used intravenously and used at short intervals; because, if the total dose is a small one, or the interval between the doses, is too great, the spirochete and their spores will not all be killed, and those that remain will develop an immunity to the drug. It is futile to give a single dose at any time, in generalized syphilis. We have no way of telling whether the patient will be tolerant to the arsenical preparation primarily, so it is best to commence with a moderate quantity, say 0.4, and gradually raise to the limit on the fourth injection, because in the presence of an energetic action upon the spirochetes, toxins are liberated into the blood which cause unforeseen symptoms, and these are most likely to occur on the third day following the second dose. Their dangerous form is that of hemorrhagic encephalitis, which is a symptom of syphilis, and sometimes causes death where no arsenical preparations have been used. But, deaths have occurred sufficiently often, and serious symptoms still more often, on the third day after the second dose of salvarsan or neosalvarsan in syphilitic cases in the stage of early generalization, to make one very cautious at this time. I now give from six to eight injections within five weeks, the number being determined by the effects upon the patient and his general well being. Between these injections the major number of syphilologists to-day give intramuscular injections of insoluble preparations of mercury. I do not think this is necessary, but after the last salvarsan injection, commencing on the second day, I think it is best to give injections of mercury at intervals of from five to seven days for thirty injections, unless adverse symptoms like stomatitis, or interference with nutrition, or painful nodes at the site of injection follow, or seem to follow them; then a rest is given for six weeks and a Wassermann taken. The object of this Wassermann is really more to satisfy the patient that everything is being done for him that can be done, for arbitrarily the mercurial course is then repeated and a rest given for two months, when another Wassermann of the blood is taken, and if this is negative, an interval of three months is allowed without treatment, and if at the end of this time the Wassermann remains negative, an interval of four months is entered upon, when, if the Wassermann of the blood still remains negative, a Wassermann of the spinal fluid is taken, and if both are negative the individual is believed to be cured but must report at intervals of every three months for a Wassermann and a clinical inspection for another year. If there is any difficulty about taking intramuscular injections of mercury by reason of pain or fear, disagreeable nodes, or possible abscesses, then I substitute inunctions, using a preparation called "Hageen," which is cleaner, more convenient and just as effective as mercurial ointment. This is given in courses of six rubs and a day's rest, one month out of every two, for a year.

Now, if at the end of six or eight or ten months, or a year, after the cessation of treatment, the Wassermann of the blood, which has

been negative, appears positive, what shall one do? Enter upon the unceasing and unending course of treatment anew? In the absence of any clinical symptoms, excepting that of the Wassermann, I think not. My experience is, that such a treatment as I have prescribed, carried out in the early period of the general manifestations, would, in all probability prove successful, and that a Wassermann once negative will remain so. But, if in the interval the individual desires to marry, or desires to enter into some relation where it is possible to transmit his disease to others, and requires a positive answer, I advise a provocative injection of salvarsan or neosalvarsan, and then, if his blood Wassermann is found negative, and his spinal fluid answering negative to the phases of Nonne, I should regard him as cured. Clinically, he might be considered cured, even if the blood did show a mildly positive Wassermann, for the reaction does not, in the opinion of many people who are competent to judge, show that one has an active syphilis. It is comparable to the tuberculin reaction which only shows the presence at some time in life, of the disease in the body.

It is in late lesions where the treponema have settled down for life, infiltrating vital organs, with or without definite destruction, as in aortitis, cirrhosis of the liver, myocarditis, pulmonary affections, etc., when unaccompanied by recognizable lesions of present or past affections of the skin, mucous membranes or bones, that the Wassermann reaction is really of most use to the clinician. It helps him clinch the guess he may have made and heads him toward the proper treatment. It does not aid him in telling when they are cured, for in these cases, as in gummatous destruction of bone, muscles, and skin, a clinical cure is the rule following aggressive combined attacks with mercury, arsenical injections, and iodides, but a continuous serological cure almost never occurs, and repeated Wassermans only serve to disturb the patient, and create in his mind doubt and despair. It is here that the man has to be saved without any definite real hope of destroying the disease. The spirochaetes are too well entrenched to be routed, but they may be disturbed, and the pathological changes they have caused, repaired. In such cases, outside of the domain of syphilis of the nervous system, the opinion I have formed from my reading, and my personal experience, is that a succession of assaults with iodine to break down the citadel, of salvarsan to reach liberated or exposed spirochaetes, and disable or destroy them, followed by mercury to clean up the field, so to speak, will give the best results.

The intervals and manner of conducting this campaign must be individual and necessarily vary with the general health of the particular person to whom it is applied. Tonics, fresh air, good company, the avoidance of too much laboratory testing and an optimistic opinion of the physician also help some in achieving a clinical cure.

The only way a hereditary syphilis can be cured perfectly, is to cure the mother while she is carrying the child, and this can be done with salvarsan

and mercury. The majority of these children, born with patent signs of the disease, die early, and thus escape a miserable existence. Up to four years, I think with few exceptions, every one uses the ancient treatment of the abdominal mercurial bandage, or the grey powder internally, and baths of bichloride of mercury. After four years, salvarsan may be administered in proportionate doses, by intravenous injections with the happiest results in producing clinical cures, using the jugular veins. Some have advocated, and put into practice, the use of the superior longitudinal sinus before the closure of the fontanelles. The congenital syphilis of grown people must be treated exactly the same as a late syphilis earned by the victim himself.

Syphilis of the central nervous system: Of late some pathologists have imagined that different strains of spirochaetes cause different manifestations; one strain for symptomatic lesions and one for nervous lesions, etc. There is no proof anywhere of any kind that this is the case. Much attention has been given to nerve syphilis during the past five years, and sufficient experimental work has been done by a few extremely competent, and a mass of rank incompetent, observers, so that we are now in a position to give the approximate worth of the prevailing methods of treatment. Attention should always be given to early meningeal lesions, for, although the majority of these clear up under a non-intensive treatment, as they are exudative, occasionally damage is done which is irreparable, and this can very well be prevented by a few immediate intramuscular injections of mercury, followed by ascending doses of salvarsan, in number, five to eight. In intracranial affections, other than early meningeal lesions, the fashion of the day is to deny the usefulness of any treatment possessing the power to arrest the disease without injecting the remedy directly into the subarachnoid space in the cord, or introducing it into the lateral ventricles where it may circulate with the cerebrospinal lymph with the hope of its reaching, through the foramen of Magendie and the foramina of Luschka, the ventricular cavities, the central canal of the spinal cord, and the perivascular connecting lymph spaces to all of the nerve cells. This theory, for it is a theory, is based upon incomplete experiments which seem to show that the cells of the choroidal plexus are composed of a colloid that will not permit the passage of arsenic or mercury from the blood stream into these lymph spaces though allowing them to pass out. As against this assumption, Homer Swift, who originated the method, says that the cerebrospinal fluid sometimes contains arsenic after intravenous injections of salvarsan. Second, Block and Chaplin state that after three or four intravenous injections of old or neosalvarsan, at short intervals, arsenic can easily be detected in the cerebrospinal fluid. Barbat states that after giving an intravenous injection of salvarsan, it will appear promptly in the spinal fluid if the pressure in the canal is reduced by tapping. The experiments of Benedict, who is not a physician, but a skilled

biological chemist, showed that the maximum amount of salvarsan in 20 c.c.'s of whole blood, forty-five minutes after an intravenous injection of salvarsan, equals .0001. Bond, repeating the experiments in four specimens of spinal fluid taken twenty-four hours after intravenous injections of salvarsan, showed free arsenic up to one-sixth to one-tenth of the concentration in the whole blood. It is not reasonable to suppose that any part of the body can permanently escape receiving any substance which is carried for a considerable time in the blood stream. The resistance in the colloidal filter will be broken down and let it through; so that, in the vast majority of cases of nerve syphilis, there is no necessity for taking the risk of intraspinal injections. It is a matter of common experience that they are painful, that the reactions are often severe, that bladder paralysis may occur, and that this may be permanent, and too frequently, they fail in any way to pay for their trouble and expense. The weight of opinion of neuro-syphilographers at the last meeting of the A. M. A. was strongly against their use. This method should not be used at all in late hemiplegia, degenerative encephalitis, myelitis or paresis. It should be saved entirely for those cases which will not respond to the arsenic compounds of the benzol ring given intravenously, and to mercury. No one is better qualified to speak than Fordyce, who states "the majority of people with abnormal spinal fluid can be influenced by intravenous treatment, but slow." Nonne condemns them without qualification. These remarks apply in a lesser degree to the use of mercurialized serums. It is well to remember that lumbar puncture is not always an innocuous procedure.

Of it Nonne says: "Syphilitics rarely have trouble, but those who are not syphilitic frequently suffer for days and even weeks from headaches, giddiness and nausea. I saw one man who was prevented from attending to his business for nearly six months by these symptoms. Puncture in the consulting-room should be absolutely condemned. The physician may be held legally liable for disagreeable results." Nonne himself has had to pay.

Do not treat early syphilis symptomatically, or syphilis at any stage by prescriptions from a book. It is a spirochetal septicaemia and requires vigorous and prolonged measures to effect a cure.

Drugs: In the treatment, salvarsan, neosalvarsan and kindred arsenical compounds, mercury, preparations containing iodine, and sodium nucleinate, together with excitants of appetite and digestion, need to be considered. Old salvarsan and neosalvarsan require very careful handling. The solution for injection, either intramuscular or intravenous, must always be freshly prepared. Their chemical composition is easily disturbed. The glassware should by preference be Jena glass, the rubber tubes pure rubber, and both should be boiled in distilled water just before they are used in vessels which have been previously rinsed with distilled water. The water for the preparation of the solutions should be freshly distilled; the filter paper should be sterile, and the sodium hydrate solution

should be chemically pure. The saline for dilution should be made with sterile chloride of sodium. The arm of the individual should be thoroughly cleansed with soap and water and alcohol, or with tincture of iodine. The salvarsan solutions can be used in much greater concentrations than that advised by the makers, but never, on account of the considerable amount of alkali, approach in concentration the solutions of neosalvarsan. I have now for about two years been dissolving my neosalvarsan powders in from ten to twenty c.c.'s of distilled water, and using an ordinary all-glass syringe to give it with, and have never noticed any ill effects from it. Intramuscular injections I do not give, and I would not advise others to give them, although most excellent physicians, like Marks and Swinbourne and Chassaignac, prefer to use them. Salvarsan solutions should always be filtered before using. For this purpose, some use several layers of plain sterile gauze, but a hardened filter paper is preferable. My experience has satisfied me, that to get the effects desired, the injections must be repeated at very short intervals, and this can be done only intravenously. Neosalvarsan is not quite so powerful as salvarsan, nor is it retained so long and it can be given more frequently. Some of the most expert syphilologists, like Fordyce, prefer to give small doses of this drug every two or three days in preference to any other treatment for syphilitic affections. Sometimes great difficulty is experienced in the late lesions of syphilis in giving salvarsan, when the veins appear prominent, because of a round celled infiltration of the intima, or a radiating phlebitis, the fluid will not flow when the needle is in the vein. I have never yet been able to convince myself that injections of old salvarsan, given at the office without rest, or restraint, of the patient, is altogether safe. I believe that it is best that the patient be in bed for from twelve to twenty-four hours after an intravenous injection of either of these drugs, but to-day many practitioners of standing administer neosalvarsan as a routine in their offices. Intradural injections of salvarsanized serum is an ingenious and fascinating proposition. If given at all, it should be according to the method put forward by Swift and Ellis. Others have sought to improve upon this method, but to the disinterested observer their improvements seem to be without merit. The injections of salvarsan or neosalvarsan solutions directly into the spinal lymph space, or into the lateral ventricles, appears to me to be an insane procedure, the results of which give no possible excuse for their use. If intradural injections are undertaken at all, the administrator must be prepared for trouble, and his patient must also be psychically prepared for the pain and aggravation of symptoms which so frequently follow. A review of the literature leaves me with very grave doubts as to whether intraspinal injections ever are curative. The natural history of the diseases they seem to help, and for which they are administered, shows intervals of apparent freedom from advancing symptomatic troubles, and we have no way of telling whether the good results which have appeared in

a few cases from this method of using salvarsan or neosalvarsan, might not have been due to natural periods of rest in the disease.

A preparation called arsenobenzol, recently introduced into the American market by the Philadelphia Polyclinic, is very highly spoken of, and possesses at present the merit of being relatively cheaper, and that supplies can be obtained. It appears not to have distinct ill effects, and it does cause the symptomatic disappearance of the lesions of syphilis. That its ultimate worth may prove to be, time alone may tell. No doubt other chemical compounds along the lines of these salvarsan preparations will be discovered by chemists outside of Germany, perhaps more satisfactory than the present ones. The war has compelled English and American chemists to take up this line of research, and in order to test the value of their preparations, we must not have a previous judgment, and must be satisfied to experiment with them, just as was done with the original preparations.

Mercury: For hundreds of years, mercury has been rubbed into the skin for syphilis, or swallowed in the form of pills or solutions. Since 1878, when Lewin of Berlin introduced intramuscular and intravenous injections of bichloride of mercury, the attention of the profession has been directed to this method of the administration of the metal. The bichloride, the cyanide and the succinimid are the soluble salts in use to-day. Of the cyanide .5 to 1.5 of a one to one hundred solution may be injected every other day, intravenously, without harm and frequently with much benefit. Of the bichloride, from .0075 can be used twice a week, dissolved in from ten to twenty c.c.'s of freshly distilled water, for from six to eight weeks, intravenously. For intramuscular injections, the insoluble preparations of mercury are almost exclusively used. Calomel is not very popular. There are some practitioners who have learned to use it without danger, but more abscesses have followed its use, and more pain has been caused by it, and salivation more frequently follows, than with any other preparation. I should class it as more potent than either grey oil or salicylate, but also more dangerous, and therefore prefer to leave it out of my practice. Of the preparations of grey oil I prefer the Burroughs & Welcome cream, or Emosester, an Italian preparation. In spite of the adverse opinion of Nelson and Anderson, I believe the 10% suspension of mercury salicylate is a potent and effective remedy for syphilis used intramuscularly, the ampules of Hynson and Westcott are convenient. The market is full of proprietary preparations, each maker claiming virtues for his particular formula which it may, or may not, possess. Of soluble preparations, enesol is very useful. The patient comes under the influence of the mercury with it very rapidly. Another is the mercurialized serum put up by Mulford. With a very great number of practitioners, nothing has ever taken the place of mercurial inunctions. While admitting their great value, I never use them unless the patient either cannot

take the intramuscular injections on account of pain, or on account of inability to appear at regular intervals in the consulting room. A course of inunctions should be thirty.

Where the eruption is scaly or papular upon the palms, and the patient cannot take salvarsan, I know of no method by which such a speedy recovery can be brought about, as by local fumigation. The healing of the chancre is also facilitated by the applications of mercurials to it. It should be cocainized and then cauterized with acid nitrate of mercury, and afterwards dressed with a weak solution, one to one thousand, of bichloride of mercury. When one cannot use the arsenical preparations and has to depend upon mercury, a calomel or ammoniated mercury ointment will very greatly help the cure of its manifestations upon the skin. So also, will baths of bichloride, one to two grams to an ordinary hot bath of 100 liters.

There are conditions under which it is necessary to take mercury internally. It is the least efficacious of all the methods of its administration, and yet it is the one most used. It must be that many cases of syphilis have been cured, clinically at least, in this way. Salivation and gastric disturbances are frequently caused by it. When used, it is best to follow the advice of Fournier and Keyes. I have found tablets of grey powder, tannate of mercury, and the Garnier pill the best preparations for continuous use, but treatment should be omitted several times a year, for a period of six to eight weeks, so as to avoid the chances of mercurialism. Tertiary manifestations, of an infiltrative or ulcerative type, including gummata on the bone, may frequently be made to disappear very rapidly by the local use of a compound plaster of mercury and belladonna. Iodin preparations are invaluable in the later stages, when there is much rounded infiltration. Iodin softens up these deposits and prepares their way for absorption and fixes it so that the mercury or arsenic can come into contact with the spirochaete. There have been no more efficient preparations introduced of recent years than those which we are familiar with: the iodides of potassium and sodium, and sagodin. Nucleinate of soda is highly recommended by Fischer of Prague, and Lane and McDonagh of London, in degenerative encephalitis and syphilitic dementia. It is employed in intramuscular injections of from ten to fifty c.c.'s of from a two to a ten per cent. solution weekly, in courses of from six to twelve injections.

Sulphur springs and radium waters: There is considerable evidence as to their usefulness. They give the patients change of surroundings while they attend to their business of getting well. I have been asked to tell when a syphilitic may safely marry.

Caveat Emptor: There is no clinical or pathological means by which we can be certain that one who has had syphilis can be married without risk, unless the disease has been treated continuously before the secondary symptoms have commenced.